ITEMS OF INTEREST.

VOL. XI. PHILADELPHIA, SEPTEMBER, 1889. No. 9.

Hints from the Profession.

HINTS FOR THE LABORATORY.

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Having a few leisure hours, and feeling inclined to write, we present the following "Items" which, tho perhaps not new to many, may be of use to some.

To prevent zinc dies from settling in the centre, pour out the first portion of your metal rapidly, and as soon as the impression part of the mold is well filled, direct the stream of zinc more slowly directly to the centre, slowing up more and more, as the surface is reached, and when reached—by which time the cast is beginning to harden on the outer margin—let the metal fall drop by drop; and as by this time the zinc is liquid in the centre only, continue the process till there is a slight bulge. When cooled, you will have a perfectly level die, with no chance of giving way in the centre, on account of its hollowness, as so often the case.

If by carelessness or otherwise an important tooth breaks off your plaster model, notch both ends slightly with the point of an old excavator, and having carefully removed the chips, so that the broken ends come together accurately, mix some oxyphosphate very thin, and apply to the broken parts, and then press them tightly together; set aside to dry. In an hour you may lift the model by the tooth alone, and it will not break.

As a plaster model to be cast in zinc, for swedging, should not be less than three inches thick, we always keep on hand two strips of oil-cloth—any old piece not too much worn will answer—each about twelve inches long by three and a half wide, and cut in somewhat semicircular shape, so that it will come together funnel shape. This we secure, where the ends overlap, by simple clasps made of sheet brass or tin, or iron wire, as used for holding two pieces of gold together for soldering, and having placed our impression on a piece of tin, so as not to soil our bench by any plaster which may run out or possibly spill, we place the rim of oil-cloth over it, the narrower part down, fill

in the gaps around the impression with old cotton batting, and pour in the plaster to the hight desired. When the plaster has hardened sufficiently, we draw the clasps, when the rim will come off clean, and by a little trimming we have a model which is easily removed from the molding sand. We have had two of these strips in continual use for over thirty years before we were obliged to renew them.

While preferring gold in every case where the patient's purse is able to bear the expense, believing that gold will ever remain the peer as a base for artificial dentures, as it also will as a filling material, we nevertheless are often obliged to use the vulcanite for cheapness' sake. When we do, we use single teeth exclusively, for we have found by long experience that they are more pliable, and by proper manipulation we are able to produce a result unattainable by the use of gum sections. These sections are unwieldy, and generally the bicuspids project too much, so it is impossible to give to the mouth its proper expression. How different with single teeth? In the hands of an artist, one who has made the human face divine a study, and by the use of the best pink rubber, which should be neatly carved in imitation of natural gums, a most life-like set of teeth may be produced, and which, by the addition of gold lining, will look quite respectable.

At one time we had great hopes of celluloid, of which a beautiful denture may indeed be made. We have long since abandoned it; for, what is the use of making well-fitting plates, when they will warp afterward in the mouth, and give us and our patrons endless trouble?

For the last ten years we have not taken a single impression in plaster, which is so exceedingly disagreeable to most persons. We use modeling compound, and we unhesitatingly pronounce it far superior to plaster in every respect. Of course, it requires proper manipulating, which is only attained by experience. We would advise all who have not used it to give it a fair and patient trial. They will soon learn to use it, while their patrons will thank them for dispensing with the nauseating plaster.

Sticky wax, for holding in place clasps and teeth, previous to soldering, is best made of rosin two parts, and bees wax one part. Melt your rosin first, in a tin cup or an old dipper, then add the wax and stir till well mixt, and pour in a basin of cold water. Take up a piece about the size of a walnut at a time, and roll out with your hands on a smooth surface into pencils; care must be taken to keep the fingers moist, or the mixture will stick. This is the best preparation we have ever used, and it may be melted over and over again.

As the frosty season will soon be here, it may be well to know how to keep the hands from chapping. The plan we have followed for years is a sure one, and requires no lotion of any kind. Most

people, when the weather and water are very cold, having soiled their fingers, immerse these only, carefully keeping the water away from the rest of the hand, when the skin will invariably chap, and the soap or the frosty air receive the blame. If any washing is needed, do not be afraid of the water, but see that the entire hand is covered with water, and tho you may be in the open air at the time, and careless in wiping your hands dry, they will be free from chapping the entire winter.

Where most of the alveolar ridge has been absorbed—especially the lower—it is often difficult to keep the plate in place, but a firm adhesion may be obtained by the following method:

After your plaster model is nearly dry, mix some plaster very thin, and with a fine camel's hair pencil, build up a half-round ridge, about the width of an ordinary knitting needle, all along the highest part of your model, or what is left of the original ridge, leaving off about a quarter of an inch from the end of the previously marked-off plate, on both sides, or the object will be defeated. Never wet the model, or your plaster will run where it is not wanted, while, when dry, you can guide your plaster with the pencil and build up a neat and even ridge; a very important point in taking the model from the molding sand afterward. The work should be performed neatly and rapidly, adding a little material at a time, till the ridge is finished to your satisfaction; when finally your plate is struck up, and while trying it in, you will be surprised to find how firmly it will adhere, by means of this narrow and continuous air-chamber.

The same process will hold good in rubber plates, but the model should be more thoroughly dried, to prevent the sticky base-plate from injuring the ridge. For troublesome shallow plates, already in the mouth, we would suggest the forming of a hollow ridge by means of an engine bur. We have used this process for lo! these many years, and have always found it a success in even the most desperate cases.

Tempering Instruments.—To draw the temper of an instrument properly, it should be held in the thickest part, or the part not requiring any temper, toward the fire, and in the meantime should be often wiped with a piece of rag dipt in pure sperm oil.

The oiling keeps the temper even, and prevents its drawing more to one place than another.

In drawing, it should be drawn very slowly, otherwise it will run too far ere you are aware of it.

Lancet blades, etc., should be drawn to a straw color; chisels, excavators, etc., to a copper or almost red color; drills, burs, etc., to a dark blue.—DR. WM. H. STEELE, Forest City, Iowa.

THE SCIENTIFIC ADAPTATION OF ARTIFICIAL DENTURE.

DR. C. H. LAND, DETROIT, MICH.

In the adjustment of full sets of teeth to the dental arch, we should recognize that the main dependence for support is due directly to the adhesion of the saliva. Previous to inserting the denture in the mouth, it has become customary to immerse in water, realizing that it is necessary to have it become at once adapted. When two plane surfaces are brought in close contact, and a fluid substance placed between, they will hold together equal to a force of two pounds to the square-inch of surface covered. When a peice of leather is soaked in water and carefully pressed over a flat surface, so that the minimum quantity of water is between, it will require a direct force of two pounds to the square inch of surface covered to pull them apart. In this instance we simply have a demonstration of the measure of the adhesion of the intermediate fluid. When a full set of teeth is closely adapted, and the minimum quantity of saliva flows between, the same phenomena takes place, and is a practical demonstration that the retention of the denture is caused by the adhesion of the saliva, and not by atmospheric pressure, as commonly supposed.

An important feature in connection with this adhesive attraction which fluids have for solid bodies, is that the full measure of the adhesion is manifested on flat surfaces only, and not on the angles. Therefore, as a mouth varies from a flat surface to that of perpendicular walls, the retaining force will be modified, reaching its maximum on flat or horizontal surfaces, and its minimum on the perpendicular walls. The full measure of retention is manifested when forced directly apart, but when the solid body is pushed sideways the fluid acts as a lubricator and permits the bodies to slip or slide past each other. This is precisely what takes place on the perpendicular walls of a mouth that has a deep arch; the saliva acting as a lubricator permits the denture to slide on the angles. All mouths that have a deep arch represent the minimum retaining force; and those inclined to the horizontal or flat, give the maximum. The latter, therefore, is the most favorable for a satisfactory fit. However, a denture that is adapted to a perfectly flat mouth, is more easily disturbed than one where there are slight angles, because where the alveolar ridge protrudes into the denture, it offers an immediate resistance to any lateral pressure, and prevents it from slipping sideways.

In proportion as the alveolar ridge is deep and the palatine surface flat, the retention of the denture will be materially augmented. A slightly curved or a perfectly flat palatine arch in combination with a deep alveolar ridge, (the anterior walls being perpendicular,) presents

the most favorable condition for the best results in adapting full sets of teeth. This is because we have a condition giving the full measure of the adhesion of the saliva, and the ridge deep enough to prevent lateral disturbance, with close adaptation to the perpendicular walls. This prevents the sliding from one side to the other, and secures close contact to the perpendicular walls, increasing friction, thus adding another element in increasing the retention of the denture. A close and uniform contact against the perpendicular walls, becomes very valuable where the anterior walls protrude, because the denture will cover the projections and thus provide a more positive means of support. However, the main dependence for the vast majority of full dentures, is the proper utility of the saliva.

I shall, therefore, nominate all dentures that are so maintained, *adhesive dentures;* and all that are maintained by clasps, crowns, caps and cements, as *friction dentures.*

In youth, or previous to the extraction of the teeth, the mouth presents the deepest arch and the most accute angles, clearly indicating the necessity of resorting to friction, and showing the least possible opportunity for the utilizing of the adhesion of the saliva.

Practically this should teach the folly of unnecessarily incumbering the mouth with an adhesive denture, when better results can be secured by resorting strictly to friction, by the use of clasps, caps, springs, etc.

From the foregoing it should become apparent that there are but two primary principles involved—adhesion and friction. They are the proper terms for the acts performed.

"Atmospheric denture," is a misnomer, a delusion and a snare. There is no partial-vacuum without an air-space, and a suitable exhausting means. Yet most of the profession believe dentures are supported by the weight of the atmosphere.

By creating an air-space on the central portion of a denture and then providing a suitable valve, through which the air could be exhausted, the power of the tongue is capable of exhausting the air sufficiently to create a retaining force of not more than ten ounces to the square-inch of surface covered by the air-space. As the regulation size of this pattern is not more than one-half inch in diameter, this would give a retaining force of five ounces, providing the valve is in good order, and the partial-vacuum could be permanently maintained, or if by enlarging the space to cover three square inches, this would secure about thirty ounces as a retaining force. If a partial-vacuum could be thus maintained, no better method could be desired as a means to support both full and partial sets of teeth.

I have described an air-space provided with a suitable valve, as a means to exhaust the air, and practically create a partial-vacuum. But

the most significant fact is that we are not in the habit of using a suitable valve, but simply form the space; the major portion of the denture being closely adapted to the mouth, contact so nicely adjusted as to shut the air in the air-space, and make it impossible to secure even a partial-vacuum. I have not been able to ascertain just how it would be possible to exhaust the air from a central chamber, and expect it to pass between surfaces that were in such close contact as to prevent it from going back over the same road. In proportion as the air is exhausted from a central air-space, the outer contact will become more intense, and must of necessity be air-tight, otherwise a partial-vacuum could not be secured. If a suitable valve was provided, and the air sucked out, a partial-vacuum would be the result; and as long as this condition could be maintained, there would be some value in the device. But experience has shown that all air-spaces soon become filled with the tissues, and at this juncture the utility of the weight of the air would cease to exist. Any substance such as air or water, or the tissues of the mouth, that may be forced or drawn into the hollow space, will establish an equilibrium and thus destroy any effect that might depend on the weight of the atmosphere.

In numerous discussions on the subject, the various writers refer to the weight of the air vaguely, and seem to place much importance on the established fact that the atmosphere exerts an influence equal to almost fifteen pounds to the square-inch.

One, eminent in the profession, has had the courage to coin the meaningless term, "vacuum by contact," to grasp the phenomena of the measure of the adhesion of the saliva. There are many vain attempts to express the simple truths that are hidden in an empty space. The regulation shape, generally the figure of a heart, shield or star, is as senseless as in having it the shape of a horse, cow or calf.

It has been recorded that the honor of the discovery of the air-chamber is probably due to Dr. James Gardette, of Philadelphia, about the year 1845. The mistake was in not making the true discovery by interpreting his act into the measure of the adhesion of the saliva.

As it is, the misconception of the real facts, have resulted in teaching a false doctrine, whereby we have been led into errors for forty-nine years. During this period we have been guilty of distorting the mouth, through accepting a theory, without asking the advocate, How many pounds do you get to the square-inch of surface covered by the air-space? And, if the diameter of the space were enlarged, what is the ratio of increasing in pressure according to the square-inch of surface covered? Do we get one, two, three or four pounds pressure over which the partial-vacuum extends, and if one pound is actu-

ally secured, how long could it be depended on as a permanent means for the retention of the denture?

We should realize, if it were possible to utilize the pressure of the air, and but one pound to the square-inch could be secured, there would be this decided advantage: The denture would be held firmly and resist force from every direction, it would not slip or slide on the angles as where the adhesion of the saliva was depended on. But ordinary experience and observation teaches the fallacy of any attempt to call into use the weight of the air.

With these simple truths so plainly in view, my greatest surprise is to see all our modern text-books on mechanical dentistry full of illustrations, giving primafacie evidence of the gravest errors. Any dentist guilty of placing such monstrosities in the mouth, simply indicates to the public that he is entirely ignorant of the simple truths that lie at the foundation of properly adjusting artificial teeth. I anticipate the day when it will be possible to prosecute anyone guilty of such malpractice.

THE SKIN.—ITS COMPOSITION AND FUNCTIONS.

Dr. George S. Jackson, in the "Cincinnati Lancet Clinic."

The skin is an envelop which completely incloses the body and communicates with the interior at the mouth, nose, anus, and meatus urinarius. It may surprise you to hear that you have an internal as well as an external skin, but so it is. The lining of our intestinal tract is but a modified skin, and so much so that some have gone so far as to speak of some skin diseases as occuring in the digestive tract.

The skin is a more complex structure than some imagine. Details of its finer anatomical divisions would but bore you, and were I to tell you about the rete malpighii, the stratum lucidum, corneum, and the like you might become impatient. So I will only say that it is necessary to remember that the skin consists of two distinct layers: (1) The true skin; and (2) the scarf skin or epidermis. The true skin is below, and in contact with the subcutaneous tissues which most everywhere consist in the fatty tissue lying like a cushion between the skin and the musscles underneath. In fact, the lower part of the true skin blends with the fatty tissue. The upper part of the true skin is thrown into a number of folds, or, if you will, has on it an immense number of projections; these are called papille. If you look at the ends of your fingers you will see that the skin is marked by a series of distinct lines or furrows. These are made by the papille standing like soldiers in a group. The scarf skin or epidermis consists of fine layers of variously shaped scales, called cells; the outer of which are hard and horney, and can be removed with ease. In warm weather, when sweating freely, by rubbing your hands together you

will soon succeed in rolling up some of these cells into little balls. The cells of the different layers of the scarf skin are united to each other with considerable closeness, so as to form a sort of scale armor. The whole fits evenly over the true skin underneath, and dips down between the papille. The thickness of the skin in man is about one-eighth to one-twelfth of an inch, tho in some places, as on the lips, it is but 1.100 inch. Under the effect of intermittent pressure it becomes greatly thickened. This is familiar to all of you in the hardness of the palms acquired by exercise or manual labor. Constant pressure will produce atrophy—thinning of the skin. It is the intermittent pressure which induces greater nutrition to the part and consequent thickening.

The functions of the skin are threefold. It affords support and protection to the underlying parts, gives lodgment to various organs which are necessary to the health and well-being of the body, and contribtue in no small measure to the beauty of the human form divine.

First, then, it supports the underlying parts. This it does by virtue of its being practically a closed sack, and by sending out from its under-surface little processes to be attached to the sheaths of the muscles. The parts immediately below the skin are for the most part soft, and were it not for the cutaneous sheat they would be liable to change their position.

The skin protects the underlying parts chiefly by virtue of the scarf skin or epidermis. The cells of the epidermis are more or less horney and hard, and are arranged like scales of armor or of a fish, one over the other. This enables it to protect the body from many of the lesser injuries. The majority of the small scratches we receive do not penetrate much further than through the scarf skin. To have bleeding we must wound the upper part of the true skin, as there are no blood-vessels in the scarf skin. The epidermis protects the body from the penetration of most fluids. This it does by virtue of the natural oil which covers its surface. You know that water will not penetrate oiled silk, and you can figure to yourself the skin as being a water-proof garment made of oiled silk. Most uncomfortable would we be were it not for this property of the skin! Imagine how you would look after taking a bath. You would be greatly increased in bulk, and would have to evaporate your moisture before a fire or in the sun before you could get into your clothes. This function of the skin is also important in various trades in which the hands must be immersed for a greater or less length of time in fluids containing more or less irritating or, it may be, poisonous matters, which could not otherwise be handled without gaining access to the blood and poisoning the individual.

Secondly, the skin affords lodgment to various organs necessary to the health and well-being of the body. The most important of these are the sweat and fat glands, the organs of touch and the hair. By means of the sweat glands we, in pure Anglo-Saxon, sweat; in polite language, perspire. Properly speaking, perspiration is that insensible, invisible moisture that constantly bathes the skin. Just as soon as the sweat is poured out sufficiently to be seen, then we sweat. Sweating is a great relief in hot weather, and, tho it is hard on collars and cuffs, keeps down the temperature of the body. You know how uncomfortable you feel on a warm summer's day when the air is full of moisture so that there is little evaporation from the surface of the body, even tho the thermometer stands no higher than 80 degs. Let the thermometer mark 90 degs. or 95 degs., and the air be dry, you feel not nearly so uncomfortable, because now the sweat is poured out more freely, evaporates rapidly, and your blood is cooled off. In hot weather, when you are sweating freely, you should drink more water than usual, so as to make up for the cutaneous loss. It is not drinking water at such times that is harmful, but the drinking of ice water. Hot fluids cause sweating, because the increase the circulation of blood in the skin, and thus increase the activity of the sweat glands. Sweating is, further, under the influence of the nerves. You all have broken out in a cold sweat at some time, either under the influence of fear of some impending evil, or from dread of an examination or the like. This sweating is frequently seen when a man is stript for examination for admission into the army. A stream of sweat goes trickling down the side of the chest from the arm-pit, even tho the room be cold. This is what is called by the French the military sweat.

The sebaceous glands secrete the oil or serum. We have already had one function of this secretion hinted at in speaking of the skin as a preventive of absorption of deleterious substances. It oils the skin. It also provides oil for the hair and gives it that glossy look which is so desirable. Enough of this is supplied to keep the hair looking nicely without using pomades. If you brush your hair properly you can say, No, thank you! when the barber with his unctious smile says, "A little hair tonic or grease, sir?" It always seems to me that the barber likes to use grease after cutting our hair to conceal till we have gone from under his hands the effect of his bad work. By this means he makes that cowlick on the top of your head lie quietly down. But how it does rear its proud form on the morrow when time and your pillow-case have removed most of his dirty, greasy plaster.

The organs of touch are located in the skin, most of them being the endings of the nerves of sensation in the papille. These are found

most thickly placed in the skin of the hands and feet, and you can see for yourselves that the papille are most numerous in those situations. These sensitive nerves put us in communication with inanimate nature, and prevent serious injuries at times. Without them the blind could not read their raised letters. Without them we might by accident burn very deeply into vital parts. When we pick up a hot iron we drop it quickly and escape with only a skin lesion, because the pain is telegraphed along the sensitive nerves to the nerve centres, and the motor nerves are immediately put in action, the muscles are relaxed, and the iron is dropt. A person who had no sensation would hold on till his muscles were burnt through.

The hair is also lodged in the skin. Its office is to make us more presentable, and to protect from injury. Absalom with his beautiful head of hair was much admired by the Jewish maidens of the period. I fear he was a sad dude; and poets never tire singing the praises of the beautiful auburn locks. The skull with its inclosures is protected by the hair from blows. The festive fly as he follows his gentle devious course on the bald man's pate, stopping now and again to admire his beautiful form in the glossy mirror, annoys the bald-headed man. We who have good heads of hair know not the fly's approach, and dread not each whispering wind. Sometimes the hair is a source of profit. The girls of Scandinavia sell their hair for gold. The hairs are capable of becoming erected under excitement. This is by virtue of certain little muscles that pass under their roots. You all have seen how the cat moves its whiskers and how his hair rises on the approach of a rival Tom with a challenge to mortal combat. Man has lost the control of his hair to a large extent, but that the hair may become erect is no idle tale. Only a word as to the skin contributing to beauty. Think how very unpleasant you would look without a skin!

PATENTS.

BY J. A. ROBINSON, D.D.S., JACKSON, MICH.

The earliest laws of which we have any knowledge which granted privileges and favors to persons who had made valuable improvements or inventions to relieve suffering and benefit humanity were enacted in England less than one hundred years ago.

There was a system established during the reign of Elizabeth and the Stewarts that became odious. It was not a legal right, but a royal favor, and related to other things besides inventions, and extended to many articles in common use. In the reign of James the First, a law was passed known as the Statute of Monopolies, declaring all monopolies illegal and void, except copyrights and patents, which were granted for fourteen years.

This system, tho somewhat modified, has become the established policy in this country, and is substantially a copy of the English law, to secure reward to the inventor.

In Switzerland, to secure proper reward to the inventor, the royalty is determined by the government at the time the patent is granted, which takes the improvement out of the hands of monopolies, and any person paying the royalty to the government has the right to use the patent or improvement. This plan prevents the extortions so often demanded by the inventors, that are so offensive to artizans and mechanics, and especially so to members of the dental profession. When the government provides such a way, or some better way, to reward the inventor, we shall be glad.

There are some persons in our profession who think it is unprofessional to take out patents, but what would have been the status of dentistry to-day without the stimulus of reward for useful and improved appliances in the dental art?

Our country is a new world, and the American dentist is comparatively a new man; and the sooner he learns to do business on a plan that corresponds to the age in which he lives, the better it will be for himself and those who seek his services.

The men who invent are thinkers; they are persons of adaptation and consecration; they are, and have been, benefactors to their brethren, and, as a rule, they suggest and give away to their co-workers little suggestions without money and without price, to make dental operations easy, more than all the money they receive for their patents. Inventions are the products of the brain, and they are just as legitimate as the labor of the hands. A certain orator was once asked how long it had taken him to prepare his oration; he replied, "just forty-four years, for I am just forty-four years old, and I have given my whole life to this work."

I do not wish to be understood as advocating the giving patents away, for it is never best to give something for nothing, and the Creator does not deal in that way with his children in the various departments of nature. Everything is dual, and inventors are seers in mechanics, their minds become illuminated with visions of uses for the benefit of their fellows, and usually the whole working of the improvement is wrought out in the night, when the body is at rest, and we commune with ourselves without interruptions. Almost all the improvements that have benefited the race have been first thought out, and then wrought out to make us great as individuals or a nation.

It is the function of the brain to think, and the hands to execute the thought. The older men of the profession will recollect the ridicule that was hurled on Dr. Atkinson for his use of the mallet in im-

pacting gold in filling teeth some thirty years ago, and now we bring to its aid the various machines and electricity. The unprecedented growth of our profession over either of the older professions is due largely to our freedom from the conventionalities that bind all professions to the past. Any innovations to long-time usages are almost certain to prove disastrous to those who discover the "new and more excellent way." The things we invent are children of the intellect and the affections. Man has no power to make or improve a thing without a love manifested toward the thing he desires to make better. The man who invents sees the improvement he wishes to make as we see the solar light before the sun makes his appearance in the morning. One of the hindrances to our free use of improvements is that they have been bought up and laid aside by monopolies because they interfered with the sale of goods already in the market, and that has discouraged men of genius from trying to make appliances that would benefit the profession.—*Archives.*

IMAGINATION; OR, THE CORKSCREW.

Do you wish to extract bad roots painlessly? Being aware that the key is unpopular and the forceps in favor, I have never met a dental advocate of the corkscrew. A middle-aged woman requested me to remove three deep and painful roots from highly inflamed gums. I extracted the two easier with the forceps, when, leaping from the chair, the patient relieved her mind thus: "I *caan't* an' I *shaant!* I might's well go 'ome'n die, as ter die *'ere.* I 'a'n't slep' fer *three weeks,* 'n I'm erbout *onsoddered.*"

"I am going to remove that root, so you'll go home happy and sleep."

"Wall, yer caan't wi' them pinchers. Caan't yer pull it wi' a corkscrew?" "O! yes, easily."

Then, dropping the forceps down my coat sleeve, I *feigned* to adjust the corkscrew to the root, which I extracted with the forceps without a sign of pain. The forceps again entered my sleeve, and, when turning from the spittoon, she saw me calmly viewing the root on the corkscrew, the halo of happiness on that woman's face ought to have been contagious, as she exclaimed: "Yer couldn't 'ave got it wi' the pinchers, *could* ye? It never hurt me *one mite.*"

MORAL:—That woman evidently regarded the corkscrew as an instrument designed to give pleasure—an instrument dear to her soul, and the last she saw ere leaving home. Verily, the ways of men (and women) are astonishing.

W. E. GORHAM, M.D.

Jefferson, Me.

IRREGULARITIES OF THE TEETH.

WM. H. SHULTZ, ATCHISON, KAS.

Kansas State Dental Association.

What can be any more worthy of your ambition than to desire to take charge of a set of distorted teeth that mar a beautiful face, and by appliances and perseverance bring about such a change that beauty will be enhanced, mastication improved, and liability to decay lessened? However, I would suggest before undertaking the task it would be well to carefully consider the situation before deciding on any course of procedure or the adoption of any system of appliances, for a hasty conclusion may result in failure, entailing much pain, inconvenience, and disappointment to your patient and discomfiture to yourself. Every irregularity must be treated individually. The condition of the mouth, age, sex, and temperament must be considered, and particularly the latter, for in two cases exactly alike in defect and requiring the same treatment, the tractableness and perseverance of one patient would make the operation easy and successful, while in the other obstinacy and neglect would result unsatisfactorily, if not in failure.

We have extreme opinions as to the time to begin regulating teeth. We advise to begin as soon as there is evidence of irregularity, after the tenth year, even feeling under the temporary teeth for the incoming tooth to ascertain its direction, while another says, "Do nothing till the second dentition is completed." The malposition of one tooth might cause a disarrangement of the other teeth, as when an upper central or lateral is forced backward by closing behind the lower incisors. This would call for an early intervention, whereas a decidedly crowded condition of the teeth at the same age would need no interference, the enlargement of the arch gradually providing for their proper arrangement. Thus, each case requires its own study—its cause, whether local or hereditary; its treatment, whether necessary or to be let alone. Doctor Talbot has brought this subject prominently before us. His articles and book will be invaluable aids to any dentist who attempts any work in this direction. His devotion to the subject gives his opinion the right of authority. I had the pleasure of meeting the doctor in his office in Chicago last summer, and saw his numerous collection of casts of irregularities of the teeth.

The use of thin platina for banding the teeth and attaching screws and springs have almost done away with rubber plate. By putting on the bands with oxyphosphate a firm attachment is secured, and when force is applied the action is positive and direct, with a minimum of pain and liability to inflammation.—*Western Dental Journal.*

MANIPULATING AMALGAM.

GEO. G. CAMPION, L. D. S., ENGLAND.

Extracts of a Paper read before the Odontological Society of Manchester.

Some experiments made by Sir John Tomes, and published in 1861, prove the difficulty of forcing amalgam properly into fine fissures, and small out-of-the-way places in a cavity. He prepared thin slips of ivory, each perforated through its centre by a cylindrical hole, and when about to be used clamped down on a flat block of ivory, so as to convert the perforation into a cylindrical cavity, with a flat floor at right angles to its walls. On the under surface of the slide several minute angular fissures were cut with a small four-angled file into the edge of the cavity wall. Packing cavities thus prepared with many different amalgams, he found that in all cases the mass failed to fill the fissures cut to test the power of penetration. These experiments show that all such minute pits and depressions in out-of-the-way places must be avoided if the filling is to be perfectly adapted to, or even in reasonably close contact with the walls of the cavity.

Another point of great practical importance in shaping cavities for amalgam is to avoid anything like a bevel on the edge of the cavity wall. In gold filling, particularly in contour work, it is often desirable, or even necessary, to chamfer the edges well away, and pack the gold solidly over them; but where this is done in using amalgam, resulting as it does in a thin feather edge in the filling, leakage almost certainly takes place somewhere. This has been shown in repeated experiments by Mr. Charles Tomes, Dr. St. George Elliot and others.

But a feather edge may be objectionable on another ground. For instance, in smoothing off an amalgam filling in a crown cavity nothing is more likely than that a thin edge of amalgam may be left here and there overlapping the enamel, particularly should the margin of the cavity be in the least bevelled. In a little time the force of mastication will chip off parts of the edge, leaving the filling standing up above the walls, and forming a groove where small particles of fermentable substances may lodge and ultimately cause further decay. Again and again we see fillings standing above the cavity margins in this way, and this has been at times erroneously thought to be an indication of expansion of the amalgam. The foregoing explanation of the appearance was first suggested, I believe, by Mr. Charles Tomes, in 1871, but it does not cover, nor account for those cases where this raising of the margin of the filling happens against the proximal walls of interstitial cavities.

A very striking case of this kind came under my notice recently in the mouth of a patient. I had filled the distal surfaces of the first and

second right upper biscuspids, not on the same day, but certainly within a month of each other, and on looking at them on a subsequent visit I found the edges of the filling in the second bicuspid perfectly adapted to the cavity walls, so that one could pass a probe from enamel to filling with hardly a perceptible catch. The contrast between this and the first bicuspid was very great; for in the latter, at the palatine margin, which was the one most readily presenting itself for examination, the amalgam stood off from the enamel, leaving a quite perceptible space between the two, into which the point of a fine probe could be easily inserted. The fillings were both made with the same amalgam, which, so far as I can remember, was in both cases mixt to about the same degree of plasticity, and inserted in much the same way. I was at the time quite at a loss how to account for the appearance. It seemed, at first sight to be evidence of a presumable uncertainty attending the use of amalgam generally, and of the impossibility of obtaining with it results of anything like a constant kind. But this would, no doubt, seem to many to be less an explanation of the appearance than a confession of the want of one; and tho, I cannot be in any way sure that I now know more than before, as to what were the actual conditions which resulted in the failure, I have, I think, an idea as to what may perhaps have been the cause of this alteration in shape. In one the filling is well adapted to the cavity wall; in the other it stands off enough to show a slight crevice between the two. In the first the cavity had a straight not a bevelled edge, it was dry during the insertion of the amalgam, and care was taken to allow no excess of mercury to remain at the edge of the filling when completed. In the other specimen the opposite conditions obtained; the edges of the cavity were bevelled, the amalgam was packed in the presence of moisture, and an excess of mercury remained at the edges of the filling, and was not removed on finishing.

I do not, however, attach much importance to these specimens, isolated cases like these prove nothing, but they do, I think, suggest that an explanation may be found rather in the shape of the cavity and mode of inserting the filling, than in any intrinsic property of the amalgam itself; and they may also give us a useful hint that when we feel inclined to be dissatisfied with the working of any given alloy, it may be well for us to make sure before discarding it for another, that it is really the filling which is at fault, and that we are not laying on the material, blame which should more justly be given to the operator.

This brings us naturally to the packing of the filling, and tho, it is probably true that each amalgam has its peculiarities which require to be ascertained and delt with, by working it in that particular way

which is most suitable for it, yet it is possible, I think, to state one or two principles as to the packing of amalgam generally. In the first place a great deal of the questioning as to the desirableness of much or little mercury has been ended by the good results obtainable by a method introduced by Dr. Bonwill, of Philadelphia. He uses the amalgam in a thoroughly plastic condition, and putting a little into the cavity places on it a pad of bibulous paper on which he presses forcibly with a blunt ended steel instrument, squeezing out all excess of mercury, and leaving the amalgam hard and dry at the bottom of the cavity. More amalgam is then inserted and condensed in the same way, and the process repeated till the cavity is full, when the last traces of superfluous mercury are squeezed out by an instrument consisting of a pad of soft rubber projecting from a metal ferule fixt to a handle. Great pressure is exerted with this instrument through a pad of bibulous paper till the excess of surface mercury is all expelled, leaving the amalgam fiim and hard, and in a condition to be easily trimmed and shaped with steel instruments without fear of disturbing it. He claims that used in this way you get more perfect adaption of the filling to the cavity walls, and obviate all or most of the alteration in form which takes place during, or subsequently to its setting.

These results seem to show clearly that under these conditions better results are obtained by Bonwill's than by the ordinary method of packing, and that the most perfect fillings can only be made when moisture is entirely excluded. But an obvious objection will at once occur to every one, the objection that these specimens cannot be regarded as any criterion of the results obtainable under the wholly different conditions one has to work under when inserting fillings in the mouth. In the first place, the fillings are all, so to speak, in simple crown cavities; in the next place, the surface of the tube is perfectly polished, and presents the most favorable conditions for packing against; and, further, the filling can be done on the bench, and the tube held in any position which may be most convenient. I accordingly tried some fillings in blocks of walrus tooth, and found it almost impossible to obtain a tight filling in them. Mr. Charles Tomes, in describing some experiments before the Odontological Society of Great Britain in 1885, stated that he could obtain water-tight fillings in extracted teeth by inserting the amalgam in Bonwill's way in every case except where there was a chamfered edge. My attempts, however, were for some time unsuccessful, and I only succeeded at last in getting one filling which was nearly water-tight. The fillings were tested in Draper's dichroic ink, which has the reputation of being more penetrating than any other for experiments of this kind, and each block was dropt into it immediately after the filling was inserted. The

explanation of these failures is, I think, to be found in the texture of the bone used, which is coarser and less hard than human dentine; owing to which the sides of the cavities were rougher than would have been the case in human teeth; and the amalgam, being unable to accommodate itself to the slight irregularities in them, allowed the ink to find its way down by capillary attraction. The possibility of this happening to the impairment of the filling—for amalgam seems to contract, or at least alter its shape more when setting in the presence of moisture than when dry—was first pointed out by Mr. Thos. Fletcher, whose work and experiments on amalgams are well-known. I found the difficulty could be overcome by coating the cavity-walls with a thin layer of copal ether varnish, and allowing this to dry well before filling. Successful results were then obtained. The conclusion to be drawn from those experiments is that the sides, or at least the edges of cavities should be smoothly cut with a finishing bur, or a hard varnish used to fill up any tiny irregularities which may exist, and which may else remain and impair the quality of the filling by permitting leakage before the amalgam has set.

Before leaving the subject of packing amalgam, it is necessary to allude to a paper by Mr. Amos Kirby, of Bedford, read before the British Dental Association at Dublin in August last. His experiments seem to have proved that for many days after a filling has set, any mercury which may be in excess at one part, is gradually transferred to another till it is evenly distributed through the entire mass, and it seems probable that it is this transference of mercury from one part of a filling to another, which causes the greater part of the alteration in shape. Basing his method of packing on this hypothesis, Mr. Kirby fills the first part of the cavity with plastic, and finishes the filling with very dry amalgam; the reason for using the latter being that it may absorb the excess of mercury, which is by packing pressed to the surface of the amalgam first introduced, and thus render the mercury, at the completion of the filling, as evenly distributed through the entire mass as possible. In this way he claims to be able to make fillings which prove water tight under a pressure of four or five pounds to the square inch.—*British Journal of Dental Science.*

Editor of ITEMS:—Dear Sir: I send you a unique specimen o newspaper work, whose teeth were broken: "The infant son of Mrs. Samuel Davis fell yesterday and broke all her lower teeth off in her upper gum. Dr. White was sent for and the teeth were extracted immediately." What a sad fall for the infant son. And did the mother also fall? And how strange this (What?) should break her lower teeth off in her upper gum. W. PAUL MOORE.

A FEW DON'TS ON PROSTHETIC DENTISTRY—FOR BEGINNERS.

DR. W. MITCHELL, LONDON, ENG.

Don't think prosthetic dentistry requires less brains or capacity in its perfection than operative dentistry; for it is replete with details, the omission of any of which means only a modified success. A higher order of mechanical skill, greater artistic perception, and manipulative dexterity is required as for any operative process.

Don't think you are a dentist because you possess a diploma and can put in a respectable filling, for unless you can decide on the best method of restoring a defective natural denture and make and adjust the required appliance, you are only half entitled to your degree.

Don't give a hurried opinion. A careful study of cases will be of benefit to dentist and patient.

Don't fail to study the merits and demerits of various methods and means; then press into your service what is best adapted to the requirements under consideration.

Don't think any source so lowly but a new and good idea may be found there.

Don't think the loudest opinions necessarily contain the greatest wisdom: refined instrumental solos are rarely played on bass drums.

Don't think even a good impression and antagonizing bite are the only essentials to success.

Don't forget to note the peculiarities of temperament, habit, nourishment, contour of figure, facial angle, and hereditary type, if peculiar, for on these, in no small degree, depends the adaptation of your work.

Don't think, because you can get a plate to stay in the mouth, and that your patient "can get along with it," you have obtained the ultimatum of success. Patients can, and very frequently do, put up with many apologies for dental art, owing to their pride and their ignorance of the possibilities of dentistry.

Don't think because the first attempt has not resulted in success the second may not; see if there is not some preventable over sight that is the cause of failure; turn your failures to account and avoid the rock that stranded you, and tell your patient who may be *impatient*, as much of your time as his is involved in the issue, and that you are as interested in the ultimate success as is he.

Don't consider a case "good enough" unless it represents your best efforts.

Don't think that in all full cases continuous gum is the best, and vulcanite the worst base for an artificial denture.

Don't think that a thick, cumbrous plate necessarily means a strong one, practically in vulcanite. The reverse of this is true.

Don't in vulcanizing try to see how quickly you can raise the heta to 320°, especially when vulcanizing heavy restorations in lower cases, as a weak and porous piece will be the inevitable result.

Don't conclude because a patient has an inflamed mouth and is wearing a vulcanite plate that it is the cause of the trouble. The same state of affairs may exist under any other base, a bad fit and faulty articulation may have more to do with the irritation than any physical defects in the material.

Don't forget that pure tin, with or without vulcanite attachment, makes one of the best bases for full lower plates extant.

Don't use silver for artificial dentures—dental alloy, a combination of silver and platina is much better, just as easy to work, and does not tarnish in use.

Don't use platina, except in continuous gum work, for any supposed virtues it may possess; it has none not possessed by dental alloy.

Don't use wires to retain partial cases, they only spring around the necks of the natural teeth and ultimately destroy them; wires are an abomination and a subterfuge of incompetency.

Don't be afraid to use a wide band, but see that it fits perfectly the largest part of the crown of the supporting tooth, and does not impinge on the gum anywhere, but leaves a clear space at that point to permit the free circulation of the oral fluids, and thereby prevent the retention of any deleterious substance.

Don't fail to see that in most cases of partial sets you can get on without any bands.

Don't fail to trim your impression or model as may be required to equalize the pressure in the finished case.

Don't entirely discard the vacuum chamber—where judiciously used it is a valuable adjunct to both dentist and patient.

Don't make artificial teeth quite as long in full cases as the natural ones would be. A slight shortening is frequently a great benefit; decreasing the leverage and securing greater utility.

Don't let six anterior teeth touch, except in a perfectly square bite.

Don't see how near you can imitate a row of short buttons in arranging an artificial denture. In this respect too many dentists are merely automatic mechanics. Versatility denotes the artist.

Don't think because your arrangement on the articulator was "O. K.," no change will be needed when the case is tried in the mouth. It is very rare that some slight alteration is not required. In this, as in many things, the little details must not be overlooked.

Don't use teeth that are very light; they had better be dark than light. Harmony, and not contrasts, are what we more frequently find in nature.

Don't trim your plate too short above the cuspids, allow it to extend to the reflexure of the lip and gum; this will, to a great extent, restore the depression caused by the loss of the cuspid roots.

Don't place too much reliance in your patient's description of what their teeth were; who ever heard of an edentulous person but had "beautiful small white teeth, and very regular?"—*Dental Review.*

AXIOMS IN PROSTHETIC DENTISTRY.

DR. L. P. HASKELL.

1. If many teeth have been lost, and the patient has reached that condition when an artificial denture must be worn, the first thing to be considered is: "What must be done to make the denture as *useful* and *comfortable* as possible?" If the extraction of other teeth will secure this result, extract them.

2. When artificial teeth are required, there is nothing in which skill is so important to personal appearance, health and comfort. Remind your patient of this when she is "shopping" for them.

3. The more difficult it may be to secure an impression, the greater the necessity for the use of plaster.

4. There are more failures from faulty articulation than from misfits.

5. Never allow the front teeth to meet, except in the rare cases where the protrusion of the lower jaw brings the upper teeth *inside.*

6. Never allow a lower second or third molar, which has been thrown forward, so its crown stands at an angle of about 45°, to be met on its face by an upper tooth.

7. When the cuspids have been extracted a year, there is always room and necessity for the plate to be worn higher and the gum fuller, to restore the contour of the lip.

8. There is no necessity for vacuum cavities in full upper dentures, whatever the shape or condition of the alveolar ridge and palate.

9. The nearer the karat of the solder to that of the plate the more satisfactory will be the results. No lower karat than 18 need be, nor should be, used.

10. A full set of single gum teeth, *soldered* to a gold plate, in these days of rubber attachments and continuous gum work, is an abomination from every point of view, and the teaching of it to a student is time wasted, foolishly wasted.

11. "Combination" dentures of any kind, which cannot be repaired without making almost a new denture (and there are such), are an imposition on the patient.

DENTISTS OF THE PAST AND THE PRESENT.

Dr. W. C. Barrett, in *Kansas Dental Society.*

When we look back but a single generation and see what the character of the dentist of that day was; when we look at his average standing, not only professionally, but socially, and even morally, and see what the dentist of to-day is, what are we to expect of the next generation, if this rate of progress is kept up.

Fifty years ago, a generation ago, the "dentist" was but a name for a "peripatetic itinerant." He was a man that went traveling about the country seeking whom he might devour, not a professional man in any sense of the term, he was simply an itinerant. There was no such thing as a profession of dentistry. There was no systematized classification which amounts to a science. There was no crystallization of all the elements, together, which might form a unified whole.

Dentists, as a general thing, were men who had failed in other vocations. Some of them were men of great ingenuity, of technical education, of dexterity, but there was no professional line for them to follow. They were not educated men. They were generally men who were without an education. They were men who did not think. They were not writers. They had no science. They thought nothing about what the teeth ought to be. They were simply putting in some kind of artificial teeth, and about the extent of their qualifications was the wrenching out of the organs from the mouth and the substitutions for them of something or other; and they were specimens of the work which was to be found in the mouths of the men who were foremost in the earlier scenes of the Republic.

President Washington always looked as tho he had a quid of tobacco in his mouth, and yet that was the very best specimen of the dentistry of that day.

They were not thinking men. Till men think they will not work out scientific problems.

The dentist of to-day who is in attendance on dental societies, who looks for the lecture, who keeps up with the advance of his profession, who stands at the front ranks in the van-guard of progress or toward it, is the best expression of the intelligence, of the progress of the knowledge of the American people of any man whom we could select from any of the professions, because he is the average of the whole. He does not belong to a special class. He has not been brought up through a thousand ruts. He has not been held down by the force of old ideas and forgotten traditions. I say, then, the dentist of to-day is—certainly we can say no less of him than that he stands among the highest expressions of the possibilities of our American people.—*Western Dental Journal.*

CONDITIONS WHICH PROMOTE OR RETARD THE PROGRESS OF DENTAL CARIES.

BY C. N. PEIRCE, D.D.S., PHILADELPHIA.

Read before the Odontological Society of Pennsylvania, March 2d, 1889.

The pathological condition designated "Dental Caries" is certainly one of the most frequent and most serious affections to which the teeth are liable, and educated dentists are all united in characterizing it as a "progressive and often continuous softening from the exterior to the interior of the crown, until a larger portion, or the whole of the tooth affected has gradually disappeared." Much of the labor of the dentist is employed in successful efforts to arrest the progress of this destructive disease, and to restore the ravages it has made in the teeth under his care.

To do this intelligently, and with the most favorable results, many things are to be comprehended, and their influence appreciated and wisely heeded. If we attempt to tear down or disintegrate any structure, organic or inorganic, this labor is facilitated by a knowledge of the tissues or molecules of which it is composed, and of the manner of construction; so, also, if the attempt be made to stay or modify the influence of the antagonisms of its environment, the same knowledge is helpful to the success of such efforts.

In pursuance of this thought, first to be recognized, are the facts that in the segmentation and aggregation of living cells, primitive integuments are formed, and from one of these the tooth germs have their origin, and that the processes thro which this germination takes place are always liable to modification by the *interruption of nutritive distribution.* Histologists note also, that the impulse which establishes the individuality of the tissues, as well as that of the organ, must be given to it while in this immature and plastic condition, and that now also must the laws controlling heredity and adaptation to function, exert their morphological or formative influence, and thro these and the nutritive currents, must be evolved the differentiated structures resulting in the ameloblasts, odontoblasts, and other tissues which are so essential to the development of the complex tooth.

After months of vital activity and continuous change, what were simple homogeneous cellular structures, become complex heterogeneous tissues, and efforts at specialization have resulted in a dissimilarity preparatory to a most remarkable process of solidification. In this latter process, the previously mentioned ameloblasts and odontoblasts (specialized cells only), in their functional duties have produced structures marvelous in dentistry and (with aided vision) in beauty; and when these are normal in shape, and continuity, they are unequaled in their power of mechanical resistance by any other organic structures.

The morphology of the individual enamel cell, fiber or prism, is not arbitrary, or the result of a whim or accident, but a mechanical necessity, essential to the density of the structure. What other shape but hexagonal could they be to make a compact and solid structure of normal shape and size? Who would not recognize the spaces in a bundle of cylindrical bodies, however tightly they may be bound together? And, if brought under pressure sufficient for solidification, the hexagonal shape must most nearly be approximated in the individual integrals. The crown of dentine, upon which these enamel cells rest, with the line of their axis almost vertical to the coronal surface, is not a plane in any sense of the term, but is made up of wavy or irregular elevations and depressions, and upon this uneven foundation these cells must rest, varying in the line of their perpendicular position, and in their density, the latter quality being in correspondence with their near or remote position regarding nutritive supply, and *their previous, as well as their prospective, functional activity.* The normality of this enamel tissue, with its maximum resisting power, is dependent largely upon the general or systemic condition during the poriod of its development and calcification. Its vices of conformation and pathological predispositions, which make this tissue an easy prey to an acid environment, are exhibited in a want of continuity of the cells, and an imperfect calcification of the same, inducing pits and ragged or roughened depressions, all which are factors in dental caries, thro their power of absorbing, and retaining in contact with the tissue, a destructible agent; hence it is of the utmost importance that the influences of these possible conditions should be recognized and appreciated.

The dentine structures, possessing a much larger per cent of organic matter, is necessarily, by virtue of this, less dense than the enamel; and though originating like the enamel from a homogeneous cellular germ, it is evolved only thro a multitude of progressive changes, culminating in a double layer of highly specialized odontoblastic cells, and their conspicuous prolongations, covering the coronal surface of the plastic mass, known as the dentine matrix or papilla. These odontoblastic cells are recognized to be the final effort of the plastic cellular mass, previous to the depositions, or secretions, of the salts of lime; and to be themselves the active agents in the elimination of the mineral substance which forms the tissue known as dentine.

The dentinal portion of a tooth is of the three dental tissues the most constant, and yet the most varied in its histological development, displaying structural peculiarities in the same species, and marked differences in different species. It affords the solid foundation on which the enamel fibers rest, and conveys to them about all the nutrition and sensation they possess, after the tooth crown has once been

thoroughly deprived of its vascular covering by complete eruption. Indeed, it is the only medium through which the enamel can have any arterial or nervous connection, after it has passed through its enveloping sack and the gum, except the little it may receive thro the thin margin of cement, with which it comes in contact on the neck of the tooth. The tubues, which permeate the dentine, and open with their largest diameters on the pulp chamber, giving an impetus to the ingress of fluids, are, when the tooth is in normal condition, a source of strength and nutrition; but when the tooth is attacked with caries, they become a source of weakness, and facilitate its decalcification and the subsequent decomposition of the organic substances which has served as a matrix for the inorganic. The dentine, like the enamel, is liable to imperfections, or structural defects, from disturbed or mal-nutrition, a sequence of constitutional abnormalities. These defects may be slight or serious, varying with the severity or duration of the disturbance.

They may consist of masses of semi-calcified dentine, or of cells or spaces known as "interglobular spaces," distributed throughout the body of dentine; tho they are more frequently recognized near the zonal line, between the enamel and dentine, which makes them more important factors in favoring decay. The infolding on themselves of the terminal ends of the tubuli, and the more frequent diseases of childhood, are probably two of the causes to which this appearance or condition may be attributed.

These recognized defects in structure are entirely harmless, while the mail, which nature has provided for the dentine, remains intact; but when the enamel rods become broken, decalified, or otherwise disturbed, so as to admit the ingress of a solvent, they become actively accessory to dentine decalcification, and subsequent disintegration, as do also the tubules themselves; and they do this through their power, first of admitting the solvent, and second of affording habitat and protection to organisms which consume and disintegrate the organic material of the tooth, and supply as their product a mass which re-acts as a solvent on the salts in the surrounding structure.

The cement which covers the dentine of the root and is itself covered and nourished by the cemental or periodontal membrane, is less dense than the dentine, possessing a larger percentage of organic substances than does that tissue. It is, as compared with enamel and dentine seldom attacked by dental caries, for the reason, that when in normal condition, it is protected by its membranous covering. But when by virtue of location and surrounding influences, it becomes the seat of caries, the increased amount of organic substances it possesses and the pabulum and protection it offers to minute beings, greatly favors

its progress and that too with more than usual discomfort to the patient. In connection with, or under the gingival borders of the gums and cervical margins of the alveolar process, it is not only an accessible cavity to fluids, but one that encourages the lodgment or impaction of food which in its fermentation, facilitates the advancement of the disease. In its structural arrangement cement differs from dentine, but not in a manner to protect it from the ingress of fluids, when once its lacune and canaliculi are exposed.

The organic substance of these two tissues, dentine and cement, by continuity and interlacing of their fibers with one another, is a source of sensation or nervous impulse and nutrition to the former dentine. This union and sympathy so frequently manifested, between dentine and cement is by dentists recognized in a tooth in which the pulp has been devitalized.

The chemical composition and predispositions of these dense dental tissues, must not be overlooked in a paper on dental caries. The fact that tooth density is almost wholly due to the presence of the salts of lime, and also that some of the acids which are at times found in the mouth, either as a result of systemic or of local conditions, readily act on this inorganic material is important, and must be noted as a factor concerning the possible chemical changes taking place in the oral cavity. The secretions of the mouth, which, without cessation, are being emptied into it from its numerous glands, are of a constantly varying quantity and quality, being subject to these modifications, through both systemic and local conditions.

But what ever the origin of their normality or their abnormality, of their benign or their vicious influence, the effect on the teeth is the same, and dental physiologists, and pathologists, must recognize in the saliva, an important factor in favoring or in modifying the progress of dental caries.

To ascertain with any degree of certainty the influence the fluid is at the time exerting on the teeth, access can and should be had to some convenient and simple test, such as litmus paper, which when turned from blue to red, or restored to blue from red, gives with a good degree of certainty the acidity or alkalinity of the secretion.

It has just been stated that this salivary secretion varies through either systemic or local conditions.

The first inquiry that naturally arises from this statement is whether there is any one period in the individual's life, so far as age is concerned, when there is a greater tendency to an acid abnormality than another.

Second, whether there is any abnormal systemic condition that may favor or induce this unfavorable condition of the oral fluids.

Third, whether there are any physiological processes which may induce the same destructive tendencies in their secretion.

That the observing dentist recognizes a greater tendency to dental caries in the young than in mature or middle life, needs only to be suggested to be appreciated, and that this is partially or indeed largely due to a prevailing acidity of the saliva is quite as patent. But the *reason* for the prevailing abnormality of this fluid is not quite so clear —youth or immaturity *per se*, would not be a satisfactory explanation, so we must look for conditions accompanying this.

It is not probable that in this period of growth the demand made on the nutritive currents for the building of the osseous structures would exhaust their supply of calciferous element, and hence so rob the blood of this ingredient that the secretions would on the slightest provocation present an acid reaction, and, again, with this minimum quantity of the essential salt, would not fermentations also be more active and their results manifest greater vigor, thereby producing that condition, so almost universally observed in the youth of both sexes, viz., rapidly progressing dental caries?

The lines of systemic normality and abnormality run so nearly parallel and contiguous, that the slightest deviation of the former may encroach on and assume the role of the latter with all its attendant consequences. It is of little moment so far as the influence it may exert on the oral secretions is concerned, whether this deviation be caused by states of fatigue—mental or physical—by anemia from deficiency in quantity or quality of blood, by malaria, or by still more serious deviations, complicated with typhoid conditions. These abnormalities, would, if of sufficient duration, record their presence on tooth structure, to be modified only by present or previous local conditions which would have power to retain their activity or destructive influences.

Physiological processes, may by taxing localities or organs, induce an irritability of the nervous system, or they may instigate what in medical parlance is termed nervous prostration, which acts very unhappily, not only on tooth environment, but also on the resisting power of the tooth itself; so that during periods of gestation and lactation as well as periods of prolonged intense mental application and anxiety, the dentist's labors are not only in greater demand, but his skill is taxed to its utmost, to keep such patients comfortable till the much needed operations can be better performed and sustained.

The effect of the above enumerated conditions is frequently first recognized through the accumulations on the teeth. If these are of an acid and soft cheesy consistency, it is safe to assert that the dental tissues are suffering or soon will suffer from their environment, unless

some remedy be applied to counteract its influence. On the other hand, a change from these abnormal systemic conditions to a more healthy physical state, is soon predicted by a change in the nature and consistency of the deposits on the teeth. If these should be firm in attachment, dense in structure, and varying in color from a dark cream to a black, dental caries, if progressing at all, is not from the influence of the glandular secretions, but from a product of the fermenting accumulations of food or debris, in the interstices or sulci in the crowns, or spaces between them; in a word, from want of cleanliness. These conditions and their results are so readily observed, that with safety the assertion can be made, that the presence or absence of tartar or salivary calculus, or its tendency to accumulate, or the reverse, is of great significance regarding the progress of dental caries.

In recognizing the variety of influences that may promote or retard the progress of dental caries, the fact must not be overlooked that they do not all act simultaneously, nor are they all necessarily of equal duration. Conditions which may be termed predisposing causes of decay may be present in a marked degree in the form of defects of conformation, or deficiency in quantity and quality of enamel and dentine, yet in as conspicuous a degree may decalcification of these abnormally developed tissues be absent. Again, the exciting cause of caries may be present in the nature of abnormal secretions, and their influence may be stayed or greatly modified by a previous condition of tooth structure, by cleanliness, and ant-acids and anti-septics. The vitality of the tooth, and its recuperative power, are factors here which must not be overlooked, for the resistance which they offer in their antagonism to decay is important.

The principles involved in prophylactic treatment, and the proper selection of agents exerting such influence, should not be disregarded. The value of therapeutic measures when systemically indicated must be recognized.

In a word, the educated, intelligent and successful practitioner of dentistry needs to know, not only that teeth do decay, but the nature and source of the solvent and its antidotes.

He needs to know, not only that some defects of conformation predispose to decay, but the causes of such malformations, the possibility of anticipating them, and the best method of protecting them when they exist.

He needs to know, not only that some systemic conditions vitiate the secretions, but through what functional derangement they are engendered, and whether they can be corrected or anticipated and their influence modified.

He needs to know, not only that the tooth has a recuperative

power, but at what age it is active, how it protects the tooth, and what systemic conditions favor and what annul or abort its influence.

These things he needs to know so that he may work intelligently, with pleasure to himself, with profit to his patients, and with the most economical expenditure of nervous energy for both patient and operator.

BARRETT ON NEW THINGS.

IN KANSAS DENTAL SOCIETY.

I have had with me as my assistant for some time one of the best bridge-workers I ever saw, and it has taken about all my time to hang on to his coat-tails and holloa "whoa." I have had to do that, because everything that came up, he wanted to cut it off and put a crown on, or stick a bridge on.

That has been our great trouble. Men seize on a single idea and their craniums are not big enough to hold but that one idea. That has been the trouble with us all through the past. We have had no one sufficiently conservative, we have been seizing on new ideas and new thoughts, and running the whole thing into the ground. We could not stop to wait and consider, and weigh the whole subject carefully, as wise men should do, looking away back down the vista of the past and see where the mile-stones of failure have been erected, and guide our course by them for the future. We could not do that; we were not satisfied to judge of the future by the past, but it was a new "Oklahoma" every time to go after. So we follow after a leader and a new idea from the highway and into the by-ways, hanging on to his coat-tails, till we brought up deep in the mud, and then we had to wipe our draggled skirts the best we could, clean our boots, and get back into the high roads again. So it has been all the way through our professional life.

I tell you it is time to call a halt, it is time that dentists begin to be wise men, and not simply men who are earnest in their profession. I love an earnest man, if he is fully determined on his course. I am willing to stand by any man almost, if he has sufficient grit and determination to help himself.

But it is time for us as a profession to begin to be guided in the future by the history of the past, and to look to these things carefully and not to seize on a new thing because it is new. Now this immediate filling of roots. Was there ever such an absurdity as that? Of course, there is a proportion of roots that may be filled immediately; but it is not a safe practice, to run off like chickens half hatched, with half the egg on,—run off with the idea that our hobby means everything, no judgment, no discretion, no level-headedness. —*Western Dental Journal.*

GIVE WELL DEFINED THOUGHTS.

Editorial in Ohio Journal of Dental Science.

The March ITEMS OF INTEREST, p. 99, gives a short, and rather practical article on "Sensitive Teeth." We quote entire:

"Much has been said in regard to 'Sensitive Dentine' and how to remedy it. I claim that the whole trouble is contained in one small word—cold. Persons perfectly free of it feel but a trifle of inconvenience in the preparation of cavities. Children only ten years of age will often not admit that 'it hurts.'

But when persons have a cold settled in their teeth, the whole tooth substance is inflamed and *exceedingly* sensitive, particularly the *defective* bone; and patients will tell us that the nerve is exposed, when, in fact, the decay is slight. To touch them in this state gives them excruciating pain. I send such patients home to wait till their cold has subsided. Then no 'obtunders' will be necessary."

Such is the article by a friend, no matter whom. The "expectant" method suggested is good unless the delay is dangerous. But what does our friend mean by the "one small word—*cold?*" Certainly something else than simply a reduction of temperature. Is there no more definite term?

Forty years ago we had a friend, a graduate of a popular university, who began the study of medicine, but soon abandoned it in disgust, because he could not find out what it meant by "a bad cold." It is doubtful if he could be satisfied even now. What is a "cold?"

Our friend in this instance tells us that "when persons have a cold settled in their teeth, the whole tooth substance is inflamed and *exceedingly* sensitive. Now if the whole tooth substance were inflamed from causes other than *cold*, would there not be a condition as "*exceedingly* sensitive?" Or can this come by "a cold settled in the teeth?"

And if true, as we believe, then this sensitiveness is often caused by inflammation of the dentine, would it not be more definite to advise waiting till inflammation has subsided? And is it not possible that the dentine may be morbidly sensitive without actually reaching the state known as inflammation? Might it not be induced from congestion, determination of blood, or even irritation? And if this inflammation of dentine is caused only by "cold," may it not be that the result continues even after the cold has subsided?

The term cold is convenient. If you have filled a tooth with the pulp nearly exposed, and you meet the patient with a swollen face a few days later, you can tell her she has taken cold, that she should not have exposed herself. Certainly the term is convenient, but hardly as definite as is desirable.

Sometimes we fail to find words to define our thoughts because our thoughts are indefinite.

AMALGAM FILLINGS AND SORE MOUTH.

In a paper read before the Odontological Society, at its April meeting, Mr. Jonathan Hutchinson attacked amalgam fillings, saying that he *occasionally* found they were the cause of intractable sores, and that it was *very usual* in his experience to find an irritable sore opposite a black filling.

Many years ago, when amalgam fillings were little known, it was common to hear them absolutely condemned by very able operators, and chiefly for the same or similar reasons as those advanced by Mr. Hutchinson: they caused ptyalism and other inflammatory conditions of the mouth, and consequently it became a dire malpractice to insert an amalgam filling under any conditions. The evidence brought forward in support of the assertions of old, is weak and unscientific; that advanced by Mr. Hutchinson, tho orderly, was absolutely inconclusive. The one definite case mentioned, the most definite he had met with, only tends to throw grave doubt on the real cause of the mischief. It was suggested that the explanation might be sought in the direction of chemical solution; and in support of this view, the fact that copper amalgams stain the dental tissues was adduced. Experience shows, however, that if solution does take place in these fillings, it is extremely slow, the quantity dissolved in a week's time must be infinitesimal, and so far as the evidence of those best able to pronounce an opinion in such a subject goes, it tends to discredit the view that the explanation is to be sought in this direction. If solution were the probable explanation, the sores should be general and not on the tongue or cheek opposite a filling. There are two points in the paper which tend to strongly uphold the view that the sores were caused by a sharp or jagged edge to the tooth, viz., the sores are described as opposite the tooth filled, and that they are irritable, but without any other special characteristic.

The opinion expressed by Mr. Newland Pedley, that the sores were caused by the irritation of a jagged edge, was the opinion of the members of the society. And it is of considerable importance to notice, that tho some of the gentlemen present presumably must have seen some of Mr. Hutchinson's cases, not one voice was raised to support his contention. In addition to the evidence of the Odontological Society, the testimony of probably the greatest authority on amalgams, Prof. Foster Flagg, is most emphatic. He had frequent complaints of this kind, and cases were sent by others to him, illustrating the ill effects of amalgams, but he invariably cured the patients without removing the amalgams; in the face of that testimony, Mr. Hutchinson's views cannot have weight.—*British Jour. of Den. Science.*

IMPLANTATION.

In N. Y. Society. Reported in *International.*

Dr. Atkinson: I am astounded of the ignorance which fell over my former study, which caused me to decide against the implantation plan. When it did come to me that implantation was not replantation, but was the introduction of a tooth into a new socket, the cloud was lifted from my eyes and mind. I saw a hope in that, where teeth have not been extracted through disease.

A Member: I would suggest a band to fasten the tooth when in place.

Dr. Atkinson: Whenever a new socket is adapted to receive an implanted tooth, it does not need any other support. When one side of the socket is deficient, I would advise the retention of the tooth by a proper support. You should take the measures, and have the socket equal in strength, and on all sides, if possible.

Dr. Jackson calls my attention to what I think about mechanical union. There is no union—not that there may not be neutrine activity — unions so formed are mechanical—and that is the tip-top crystallziation of all individual bodies. Everything is going toward crystallization; but to call it mechanical union is wrong. You should say chemical union; here is the mechanics of chemistry.

Riggs' Disease. Dr. William H. Atkinson, New York: Any man who would use an edge for pushing, pulling, or scraping should be prayed with. Any one who can use Riggs' instrument needs our commisseration. The edge cuts a concave ditch through the deposit. You should pull that deposit off, not tear it off. Every stroke of pushing an instrument tears off a part of the gum, and you have the broken fibres of the lime cells driven into it, and you will tear things to pieces, instead of doing it delicately and and gently. Then you must abide by the consequences, and get rid of a scrape you would not have got into if you had used proper manipulation. All scraping is pushing if it goes from the hand. All scraping that comes toward you is pulling; but the point is, if you will persist in using Riggs' instrument, make a bend in the point. I do not know of anybody delicate enough to use a sharp instrument and not do damage.

I advise the use of something that carries oxygen by wholesale. When we get them all in our minds, we will be able to select that which is best of all for our needs. We want something that will promote the new growth. What is the new growth? It is at first a clot. That clot passes the different embryonic conditions whereby it gets to the point where it is myxomatous tissue. Then we will get the alveolar plate, which will come from the osteoblast that comes from the osteomembrane at the alveolar wall, and there you will get a new plate around the tooth.

Whenever a tooth is so loose as to require any sort of support, support it with whatever you can make a support with. Never attempt to clean a loose tooth, unless you have it in the position it should be and held there by floss silk, waxt. If one turn is sufficient, all right; if not put another half way up or half way down, till you get the tooth standing firmly, so as to bear the mechanical action. I think most of the cases of pyorrhea alveolaris have been in teeth that wibble-wobble, so when it is brought into its place the patient could not shut his mouth. It would project too far. When you have it in place, take your engine and trim them till each one has the proper occlusion so each tooth shall fill its required place. The thing is to clean the tooth.—*N. Y. Trans.*

A SHOWER OF TEETH.

EDITOR ITEMS:—A lady twenty-six years of age presented herself at my office lately with several teeth requiring treatment. On examination, I noticed the right upper first and second bicuspids were malposed, standing side by side across the arch, in contact with the right upper first molar, and quite a space existing between the bicuspids and cuspid. On calling my patient's attention to this, she explained that in the fall of 1880, the tooth occupying the space noticed became loose and dropt out (undoubtedly the first year molar). The opening left in the gum closed promptly, and nothing further occurred until June, 1885.

At that time one of the enclosed dwarf supernumeraries made its appearance, and, feeling quite loose, was removed and retained as a curiosity. The opening quickly closed. In about one month later, three or four more came down, and this intermittent process of eruption continued till the following December. Twenty-one in all having been removed. Nature now seems to tire of her escapade, and refuses to do so any more.

I had the pleasure of exhibiting a few of these teeth at the Minnesota State Dental Association, lately held in Duluth. Among those present was Dr. Kulp, of Davenport, Iowa, who informed me he had seen a similar case, where seventeen teeth were brought forth. I have since found my patient to be the person he referred to, she having erupted the four additional teeth since her removal to this city.

St. Paul, July 18, 1889. B. C. CORNWELL.

[This is certainly a singular and unusual instance of supernumerary teeth; the most remarkable we have seen on record. If others have seen similar cases we should like to hear from them.—ED. ITEMS.]

GOLD FILLING IN PORCELAIN TEETH.

We are frequently called on to put a gold filling in an artificial tooth, where they will show just enough to give them the appearance of being natural teeth. We do not always have a good assortment of cavity teeth,—none of the right shade, size, or shape. We may prepare one thus: Cut in a cavity just where you want it with a very thin edged rubber and corrundum disk, which can be done very quickly and without cutting away much of the tooth; a deep cavity has a tendency to weaken the tooth just when it needs strength.

Cavities can be made in this way in teeth ever so small without materially weakening the tooth.

The disk should be held in such a manner that when the cut is made you have sufficient under-cut on each side for retaining the gold, cutting the cavity a trifle wider at the ends than the centre.

The central portion of the cavity need not be cut as deep as the sides where the under-cut is.

It takes but a small quantity of gold to fill such a cavity, and they can be made almost anywhere you choose to put them.

New Berlin, N. Y. M. H. FISH.

SETTING LOGAN CROWNS.

If a root is pretty well decayed, particularly on the lingual aspect, we find it difficult to adjust one of these crowns; in such cases I have employed the following method: Prepare the crown and root without being particular about getting a very good joint; prepare the interior of the root, dove-tail it, and insert the crown with cement. When that is hardened, I cut away some of the cement from the lingual portion and fill it with amalgam. The peculiar shape of the Logan Crown, being hollowed out on its root aspect, hollowing the root will allow a secure anchorage for the amalgam. If it is not desirable to use amalgam, I cut away the root at the juction of the root and crown, and fill with gold; then amalgam will not show. Where the root is decayed all around, I have used the amalgam altogether, filling part of it first and the rest at another sitting, because in that manner I think the amalgam can be better hardened than if done at the same sitting. I have found this method very efficacious, and get a good joint, thereby preventing the early loosening of the pin.

—*Dr. Starr.*

Making Plaster Impressions.—Dr. C. J. Giamm says:—While forcing cup into position, let the patient change from the upright posture to one bending forward at an angle of 45°, allowing the head to drop on the chest. The annoyance of "choking" will thus be avoided.—*Archives.*

For Our Patients.

"IN AFTER DAYS."

In after days, when grasses high
O'ertop the tomb where I shall lie,
Though well or ill the world adjust
My slender claim to honored dust,
I shall not question nor reply.

I shall not see the morning sky,
I shall not hear the night-wind sigh,
I shall be mute, as all men must,—
In after days!

And yet now living, fain were I
That some one then should testify,
Saying—*He held his pen in trust*
To Art, not serving shame or lust,
Will none? . . Then let my memory die
In after days.

—*Austin Dobson.*

PROFESSIONAL TREATMENT OF THE TEETH.

From pamphlet published by the Illinois Dental Society.

"Under the present habits of living, and with the prevailing tendency of teeth to decay, the efforts of the owner can not be depended on to discover dangers or to apply appropriate remedies. The most expert professional services and delicately constructed instruments are frequently required to disclose troubles.

"There are but few persons who do not need, at some time, the services of a dentist, and almost everybody ought to have their teeth examined occasionally, whether conscious themselves that there is any trouble or not. This should be done as often as once a year for most people, and many, especially young people, will be much better cared for if they visit the dentist for a careful examination at least twice a year, and children often need to do so three or four times a year. Such regular visits to a dentist, without reference to the consciousness of any trouble, are desirable, because people are often wholly unconscious of cavities in their teeth, or of the progress of destructive inflammations of the gums and alveolar processes, till serious harm has been done, which might have been much less if a dentist had seen the mouth some months sooner. Of course, it is understood that if conscious of anything wrong with the teeth, a visit to the dentist should be made at once. If decay of the temporary teeth has not already made regular visits to the dentist necessary (but is often advisable) the teeth of every child should be examined very soon after the coming of the first permanent molars, which appear at about six years of age and often decay very

soon after they are erupted. Visits to the dentist should be regular and frequent from this time till mature age, at least. Especial care should be taken to have a dentist see the child *immediately* after the shedding of each temporary molar, for the removal of them uncovers the anterior surfaces of the sixth year permanent molars, which are often decayed at that point. The examination, and, if necessary the filling, is comparatively easy just at this time, before the permanent bicuspids take their places in front of them. There must be no delay, however, for the bicuspid will often advance enough to be in the way within a very few days after the temporary molar is out.

Teeth which have been carefully and skilfully treated are not entirely exempt from further troubles, and they ought, also, to be frequently examined.

The most perfect filling of decayed cavities in teeth is only a repair of damages, and a recurrence of decay may often take place afterward, without the fault of either the dentist or the patient. There are two or three reasons why teeth generally prove less liable to decay after filling than they were in the first instance. The exact spot where caries had shown itself most likely to begin, is now covered with the imperishable metal of the filling. Another reason is that many people, especially young persons, finding the care which they have bestowed on their teeth has proved insufficient, and influenced by the instruction and warning of their dentist, will take so much better care of their teeth as very greatly to diminish their general liability to decay anywhere. And finally, in the case of most people, the tendency to decay of the teeth progressively diminishes from childhood till mature age or later, so that it often happens that teeth, which have to be re-filled several times during childhood and youth, are finally preserved, tho for some years, there may have appeared to be little prospect of it.

"The dentist is equally anxious with the patient for successful results with the least possible amount of suffering and expense. Therefore, to obtain the greatest good, mutual assistance and forbearance is not only desirable, but very essential."

"Whenever a dentist, or any person skilled in any art or profession is employed, he should be left untrammeled in all the essential points of his work."

CALLS.

"The time of the dentist during hours devoted to engagements and labor is usually pre-arranged and limited. The moments are not only very precious to him, but they also, usually, are very important to the person who is in his chair."

"Therefore, persons requiring immediate attention, calling unexpectedly on the dentist for such minor services as advice, medication,

appointments, etc., even if requiring only a moment, should remember it is not convenient or practicable at all times for the dentist to leave his work or to be interrupted, even for a brief time. He will attend to you, with pleasure, at the first opportunity, if you will kindly and patiently wait."

"If careful counsel or expert services are desired, it is better, whenever it is possible, to seek the dentist when he is disengaged, or during the special hours he has allotted for that purpose, or by a previous appointment."

THE CARE OF ARTIFICIAL TEETH, AND OF THE MOUTHS OF THOSE WHO WEAR THEM.

The wearing of artificial teeth, whether partial or full dentures, is often the cause of an inflamed or sore mouth, and partial sets frequently prove injurious to the remaining natural teeth. Many mouths are habitually reddened and inflamed, and the mucuous membrane much thickened, without any sensations of soreness to attract the attention. Such a condition promotes the softening and absorption of the bones beneath, so that in a few years the plates no longer fit, and as time goes on, the shrinkage of the alveolar ridges becomes so great that the mouth no longer has a suitable form nor the requisite firmness to support a set of artificial teeth with sufficient security and capability to resist the forces brought to bear on them. It often happens that the inflammation just described becomes more severe, and sore spots appear in various places under the plate. These attract the attention and are often palliated by treatment or medication, without anything being done of much value, toward remedying the causes which are constantly operating to perpetuate the diseased condition. Of course, an ill-fitting plate or an unsuitable one tends to aggravate all these troubles, and often great harm is done by continuing to wear plates after the mouth has changed so much as to spoil the accuracy of their adaption.

Much has been said in favor of the superiority of metal plates over those of rubber or celluloid, and much also in regard to the poisonous properties of rubber plates caused by the vermillion (sulphate of mercury) with which they are colored. There may be very rare instances in which injury is caused by the mercurial coloring, but the conclusion appears to be unavoidable, (however mortifying or unpleasant it may be) that almost all of the inflamed mouths, and decay of natural teeth, caused by the wearing of artificial dentures, are caused by the want of sufficient cleanliness of the teeth or plates and of the mouth, or by want of proper adaptation. The space between the plate and the surface of the mouth, or between plate or clasps and natural teeth, offers the most favorable opportunity imaginable for the rapid fermentation or putrefaction of all particles capable of such decompositions. The

result is that we often find the plate and mouth covered with a slimy, tenacious, sticky and offensive coating which cannot be entirely removed by any hasty cleaning with brush and soap, such as many people are in the habit of; and the cleansing of the surface of the mouth, which needs it as much as the plate, is often wholly neglected. This is not very surprising, perhaps, when we reflect that want of proper care is often the chief cause for the loss of natural teeth, and it can hardly be expected that the artificial ones which replace them will receive any greater attention.

The first thing to be done when a new set of teeth is worn, should be to obtain accurate adjustment of all parts, so that the fitting may be sufficiently close, and not crowd the mucous membrane hard enough anywhere to make it sore. It is often necessary to make several visits to the dentist before that is accomplished, since it is desirable to cut away the margins of the plate as little as may serve to accomplish the end desired. Artificial teeth may be cleaned with a brush and water, using soap and prepared chalk or tooth-powder, the object being to use friction enough to remove the slimy and sticky deposits on the surface without roughening or wearing the plate. If an ordinary brush will not reach every part, a special brush should be obtained that will.

Cleaning after eating should be the rule, as nearly invariable as it is possible to make it, and some will fine it necessary to clean both plates and mouth at bed-time and the first thing after rising, in addition to doing so at mealtimes, if they would keep their mouths perfectly healthy.

If partial dentures are retained by clasps, these, and the teeth to which they are applied, require very especial care to remove every particle of food from about the teeth and from the inner surfaces of the clasps. There is doubtless often some wearing of the teeth by the mechanical action of clasps rubbing on them, but this is almost always trifling and slow in its progress. The grooves around the teeth corresponding to the surfaces covered by clasps, and often presenting an appearance similar to what might be expected from friction, are almost always due to a chemical action of the acids produced by the fermentation of particles lodged between the clasps and the teeth, and the process is closely analogous to dental caries.

ALL ABOUT AN ACHING TOOTH.

"It never rains but it pours," was the salutation of a gentleman to his dentist, on whom, in company with a bright ten-year-old daughter, he had called. "It never rains but it pours, doctor. I have suffered indescribable torture all night long with a jumping toothache;

my little darling here," pointing to his child, "has also endured a like affliction, and we have come to you to have our tormenters removed."

"I will be happy to perform that service for you," the dentist replied, with a one-dollar smile sporting around his big moustache.

"Come, darling," said the father, taking his little one gently by the hand, "now let the doctor see what a courageous child I've got. You can sit in that beautiful chair yonder," waving his hand in the direction of this "thing of beauty and joy forever," to so many palpitating hearts, "and that naughty tooth will soon be out and your pain then, will be all gone."

"Mamma told me you would have your tooth out first," said the little sufferer, looking up pleadingly into the eyes of her father.

"Nonsense!" he exclaimed, with a countenance that indicated there was no nonsense about it. "Nonsense, Nellie, your mother made that remark thoughtlessly; so come, don't keep the doctor waiting, have that ugly tooth out at once, and I will give you a new, crisp, one-dollar bill—won't that be splendid? Then papa will have his naughty tooth out too, and we will go home and tell mamma how brave we were."

"I don't want to have mine out first," she said, crying piteously, "and mamma said I mus'nt, for if I did you wouldn't have yours out at all."

"But I tell you Nellie," said the father, coaxingly, "I will. Isn't that enough? So come, do as papa says, and you shall have what I promised you."

It took a long time and more tempting offers before the timid child consented to be the first victim; and when, at last, she reluctantly yielded to the persuasion of her father, and her tooth was extracted, and she had become calm, she hurriedly left the dental chair, her face betraying an anxiety far beyond her years, and, looking up tenderly into the eyes of her father, she said:

"It will hurt awfully, I know, papa, so never mind the dollar you promised me; dear mamma will be so glad when she hears that your bad tooth is out too; so please let the dentist take it right out; and you won't hurt my papa more than you can help, will you?" she added, addressing the dentist with a pleading look.

If an earthquake had suddenly startled him, the face of the father could not have shown more terror than it did when these words reached his ears. His whole frame trembled like an aspen-leaf, and, in a voice almost inaudible by emotion, he whispered:

"Never mind that now, Nellie," and with his darling nestling closely to his side, as if realizing his agony of mind, he left, too much demoralized to say a single word to the astonished dentist.—*The Practical Dentist.*

HUMOROUS INCIDENTS IN OFFICE PRACTICE.

"I have been making a study of noses lately," says a writer in the Lewiston *Journal*, "and really its astonishing to find how large a proportion of the noses are twisted to one side or the other. Try to find the median line of a person's face, by tracing it from the tip of his nose, and see how you come out! Many people who imagine their noses are perfectly straight would find by a close inspection that those appendages gee or haw a little—perhaps to their amusement and maybe to their chagrin."

A Portland dentist tells a story to the point. Says he: "After I had fitted a set of false teeth to a lady, she exclaimed: 'Why! you have'nt got the middle of the set in the middle of my face.'

"I looked again, and thought I had.

"'But just look at my nose!' said she. 'The middle of the set certainly is not in line with the middle of my nose.'

"That may be," said I, "but your nose—

"'Do you mean to tell me that my nose ain't straight?'

"I think you will find that is the case.

"'How much is your bill? I'll pay it, and you can keep your old teeth!'

"She paid the bill, threw down the set, and flounced out as angry as an angry woman could be. She went home, her friends told her how foolish she was, she lay awake all night, and the next day came back, apologized, and had her work finished."

A very interesting four-year old tot who had seen her father's face poulticed for the toothache, and had heard her mother implore him to go to a dentist and have the troublesome tooth extracted, was deeply impressed with the performance. One day, while her mother was entertaining company in the parlor, she procured some prepared chalk from the dressing case, and, reducing it to a fine powder, soon had it moistened to the consistency of a poultice which she applied to her doll's face in pure orthodox fashion—utilizing a white silk handkerchief, belonging to her father, to hold the poultice in position. Then putting the baby into its dolly carriage, she went to the sidewalk where she was joined by a neighbor's child of her own age, who, on seeing the doll's face bundled up, said:

"Why, 'Izzy, 'ot ails oo 'ittld baby; its face is growed up so big?"

"Oh, doodness, it is got awful toofiesache," said she, taking the doll in her arms and fondling it tenderly; "it twi'd and twi'd and twi'd all night long, and I got 'most 'stracted; sometimes I wish it had no toofies at all. I am goe'n to papa's dentist for him to give it some medicine."—*The Practical Dentist.*

Editorial.

PLATINA.

The dental profession have no doubt noticed the frequent references to the advance in the price of platina, an indispensable article in the manufacture of porcelain teeth. We give place to several editorials that have recently appeared. The following in the *International Dental Journal* for July:

"The increased demand for platina during the past few years has tended to raise the price rapidly, and the last eighteen months has seen a rise of two dollars an ounce. It has doubled in value in the last decade, with the consumption increasing; and, with no new fields discovered, but one natural result can follow, and that is, a very marked further increase in price in the near future. The increased demand is not so much due to its enormous consumption in the manufacture of teeth as to its adoption in the electric-lighting process—every glass globe containing a coil of platina wire.

"Platina is the only metal thus far known that can be used for pins in the manufacture of porcelain teeth; the source of supply is confined almost entirely to the Ural Mountains, in Russia; some little has been discovered in South America, but none worth speaking of. Considerable money has been spent prospecting for mines wherever indication seemed to point to the discovery of the ore, but so far without any tangible results. In addition to the scarcity of the article, the entire product of the world is in the hands of a powerful European syndicate, which manipulates the market at will and controls prices.

"The increase in the price of the metal can have only one result, and that is to raise the price of teeth or drive the manufacturer out of business. This specially relates to the so-called cheap teeth, which have during the past few years been so much improved, some grades having reached that state of perfection that the price can easily be advanced and yet compete with the higher priced teeth; but other manufacturers will no doubt be forced to retire from business. Unless some means is found to substitute other metals or methods of manufacture, we very much fear the dollar tooth will become a thing of the past."

Another, as follows, from the *Mercantile and Financial Times* of July 20th:

"The wonderful development of the use of the electric light is affecting various interests, some close at hand and some a long way off, in ways that would never occur to the ordinary observer. As the

reader will be aware, in the ordinary channels of trade the price of any given manufactured article is governed by the cost of its production in raw material and labor expended. But an anomalous exception to this universal rule is exhibited in the porcelain tooth trade. For more than a quarter of a century the dentists of this country have had the merits of such teeth presented to their notice. The present ruling price of porcelain teeth was fixt, when platina, the principal element of cost in their manufacture, was obtainable at a price which afforded a modest margin of profit. But circumstances over which the manufacturer could have no possible control have conspired to gradually consume the very modest margin originally afforded, and he finds himself to-day facing one of two alternatives—either a forced retirement from business or an increase in the price of the teeth that will enable him to get some remuneration for producing them.

"Now what does the reader suppose is the cause of the increased cost of platina?

"Principally the almost universal adoption of the electric light. Every one of the innumerable glass globes which give light in the streets and houses contains a coil of platina. Now the great source of supply of platina is in the Ural Mountains of Russia, some little coming from South America; but the entire product of the world is under the absolute control of a powerful European syndicate. Many expeditions have been sent, both from Europe and America, to places where there seemed to be surface indications favorable to the discovery of the coveted ore, but thus far no satisfactory practical results have been arrived at. With no new source of supply yet discovered, and with the demand for the metal increasing at a rate that is apparent to every one, it is not to be wondered at that within a few years consumers of platina have been obliged to meet an advance almost doubling its cost to them. Platina is the only article thus far known that can be used in the manufacture of artificial teeth, and it looks as tho the manufacturers would have to advance their prices if they wish to live.

"As is well known to all the world, the city of Philadelphia is the headquarters of the artificial teeth manufacturing business. Your correspondent has been making calls on the leading concerns here in this line, and he finds in nearly all cases business is good, but everywhere there is heard the complaint that though the prices of teeth to the trade remain the same as they were years ago, the price of platina has doubled. There is a general feeling that an advance in prices must soon take place or else the manufacturers will be ruined. The dental profession is noted for intelligence and fair mindedness, and it is, therefore, safe to assert that when the manufacturers inaugurate an advance in prices that is clearly inevitable, and for their own protection,

there will be no opposition or complaint. It will be understood that the advance in prices is actually forced on the manufacturers, who, if they had their own way, would be glad to retain the old figures. But no sensible man can persist in manufacturing goods when he does so at a positive loss."

The following interesting statistical article which appeared in the columns of the *Electrical Review* of August 12th, a New York journal devoted to electric lighting, is significant:

"Charles Wood, an assayer, in 1741 found in Jamaica some platina which had been brought from Carthagena and which he forwarded to London for inspection as a curiosity.

"The first to mention platina by its present name, however, which means "little silver," was Don Antonio Ulloa, a Spanish mathematician, who, in 1735, accompanied the French academicians who were sent to Peru by their sovereign to measure a degree of the meridian by which to determine the figure of the earth.

"After his return he published at Madrid in 1748 a history of his voyage, and mentioned the abandonment of the gold mines in the territory of Choco on account of the presence of platina, which being too hard to easily break or calcinate, the gold could not be extracted without much expense and great difficulty.

"It is reported in the Chemical Annuals for July, 1792, that the miners of Choco, discovering platina was a metal, began to use it in adulterating gold, in consequence of which the Court of Spain, fearing disastrous results, attempted not only to prevent its export, but to conceal the discovery of the metal from the world.

"To effect this all gold brought from Choco, to be coined at the two mints of Santa Fe, was carefully inspected, and all platina separated and given to the king's specially appointed officers, and when a sufficient quantity had accumulated it was taken to the river Bogota, about two leagues from Santa Fe, or to the river Cauca, about one league from Papayan, and in the presence of witnesses thrown into the river.

"From the great specific gravity of the metal, it being the heaviest known, together with its malleability and ductility, and the fact of its great resistance to the action of acids, alkalies and sulphurs, it has become known as the 'metal of the chemists.'

"Some of the most important discoveries of modern chemistry would have been impossible without the aid of platina. It is so soft it may be readily cut with the scissors, and when formed into a mirror, reflects but one image.

"Platina has been found in various parts of the world, Peru, New Granada, Brazil, St. Domingo, and in the gold washings of California,

Australia and Borneo; but the principle source of supply is in the Ural Mountains of Russia and the auriferous sand of Kuschwa, in the Auralian Mountains of Siberia.

"Platina is rarely found in pieces larger than a few grains in weight.

"The chief uses of platina are for the various apparatus used in chemical laboratories, such as crucibles (first crucible was produced in 1784), spoons, blow-pipe points, tongs, forceps, and boilers or stills for concentrating sulphuric acid. A still of this kind, valued at 95,000 francs, was exhibited at Vienna in 1873, capacity 20,000 pounds of sulphuric acid daily.

"An ingot valued at $20,000 was exhibited at the London Exhibition of 1862.

"On account of the high degree of heat requisite to fuse or melt platina—melting point 1,460° to 1,480°—it is the only metal used for making the pins of porcelain teeth, and on account of its value and lack of any known substitute, has become the greatest item of expense in their manufacture.

"It is also utilized for making fine jewelry, and a great and growing demand has been but recently created by the development of electricity.

"The Russian Government began coining platina for general circulation in 1826, and continued until 1845, when by an imperial ukase the coinage was discontinued and the $2,500,000 issued called in because of the great fluctuation in the price of the metal.

"The average production of platina metal from 1828 to 1845 amounted to 2,623.8 kilos, or 5,784.48 lbs. per annum; from 1875 to 1884, inclusive, the average yield of the Russian mines was 3,483.3* lbs. per annum, showing a decrease since 1882, the maximum year, of 45 per cent. in the yield. The Russian mines yield 80 per cent. of the total product of the world.

"The price of platina, which has always ruled very high in consequence of the continually increasing demand, the limited source of supply, without any new discoveries of moment sufficient to relieve the market, is constantly advancing, so rapidly, indeed, as to cause serious apprehensions for the future.

"Those industries whose manufactures depend largely on platina as their chief element of cost (and with no known substitute in sight), such as stills, crucibles, porcelain teeth, electrical and chemical apparatus, etc., are suffering more or less seriously from this increase in price, and for self-protection it would seem will be obliged to advance prices proportionately."

*Above figures are from the latest statistics obtainable, up to May, 1888. Russian officials are said to be very dilatory with their reports.

We have been led to more detailed investigations of the subject, and have gleaned the following statistical date: In the report of David T. Day, chief of the division of mining statistics in the U. S. Geological Survey Department for the last year, he says: "Considerable search by dealers produced 448 ounces of platinum and part of this came from British Columbia."

In the official reports published since 1882, we find that in that year there were but 200 ounces reported, in 1883, 200 ounces, 1884, 150 ounces, 1885, 250 ounces, and in 1886 but 50 ounces.

The annual production of Porcelain Teeth in the U. S. is about 20,000,000. The entire quantity of platium found in the U. S. reported for the largest year would scarce afford a days supply to our manufacturers.

Examining the official reports of importations since and including 1887, we notice in that year the total quantity received in the U. S. was but 11,703 ounces, whilst the importations for fiscal year 1888, aggregated 85,520 ounces, indicating very conclusively an extraordinary increase in the demand for this important metal within a comparatively short period of time, and accounting intelligently for the corresponding increase in its price, as no new sources of supply were discovered to meet it.

We regret very much in the interest of the Dental profession the conclusions we are driven to by investigation of facts before us, which are that, governed by the natural laws of trade, the inflexible law of "supply and demand," manufacturers of artificial teeth can have but one alternative left them, viz.: a corresponding advance in the price of their manufactured product of which platinum constitutes the chief element of cost. With more especial force do these conclusions apply to those particular makes of porcelain teeth that are selling at less than half the price of other makes.

The Muscular Tissue.—The muscles are elastic protoplasmic substance, arranged for the principal feature of contraction, not expansion. They aremade in extremely fine fibres, or rather each protoplasmic mass becomes an elongated fibre, and many are found in a bundle united by connecting tissue. They have no sensation within themselves, but intimately connected with them are nerves, which impart stimulus to cause their various motions.

There are two kinds of muscles; the voluntary and the involuntary. The voluntary are immediately under the control of the will, and give form to the body, and motion and expression to its various members. Almost invariably their rise or insertion are on the surface of one ot the bones; or—to give movement to the articulated bones—

their origin is in one bone and their terminations in another. Thus locomotion and the movements of the various members are brought under the control of the will. The voluntary muscles have the peculiar feature of cross fibres, which gives them greater strength and very much facilitates their contractible powers.

The involuntary muscles are hardly more than smooth, elongated, flattened cells, with a central neucleus, yet when bound together they become rigid and of great strength. The internal organs are composed of these muscles, and also some other parts, where the will has no control of their activities, and gradual and lasting contractions are required. They seem to be almost entirely controlled by the nerves of the sympathetic system, and act without the consciousness or volition of the mind.

These three—the epithelial, nervous and muscular, with the connective, which has its origin in the muscular—are the primitive tissues of the body.

The Nerve Tissue.—In the primitive multiple protoplasmic group, the minute cells, work toward the surface, forming in the lower animals two layers, and in the highest order, three. These three afterward represent the epithelial, the muscular, and the nervous tissues. These tissues, however, are not distinct in their source, office, or function. For instance, the outer, or nerve layer of cells dips down and ultimately unites with the middle or muscular layer, and the latter become closely related with the outward and the inner or epithelial layer. Notwithstanding these intimate relations their characteristics become distinct, and their offices and functions quite as much so.

A nerve is composed of "a cell capable of receiving impressions, and a fibre capable of transmitting the results of these stimuli." As these cells and connecting fibers increase into a mature nerve, the cells form ganglion or multiple cells, and the fibers are manifold; there is also formed a third essential feature to both their character and function—the wonderful sensitive terminations. There is little sensitiveness any where but in their extremities.

Electricity in the Dental Office.—While in Washington recently we saw in a dental office a very convenient attachment to the street electric wires, which served as an admirable fan and as a motor for the dental engine. The fan was so far from the chair, and so spread the current, so that it was deliciously cooling at the chair, without the inconvenience of a strong current. Where a public electric wire passes a dental office this must be the most convenient way of getting power.

THE LATE DR. SAMUEL D. FRENCH.

TRIBUTE TO HIS MEMORY FROM THE THIRD DISTRICT DENTAL SOCIETY OF THE STATE OF NEW YORK.

With feelings of profound sorrow, the Third District Dental Society, of the state of New York, records in its minutes, and announces to the dental profession, the death of Dr. Samuel D. French, of Troy.

Dr. French died suddenly at his residence, July 21st, of paralysis of the heart. The news was everywhere received with surprise, and was immediately followed by expressions of sorrow and sympathy.

He was a charter member of this society, and during the twenty-one years of its existence, his congenial presence, and friendly nature, endeared him to every member. Those who knew him best loved him most, and by his death, this society suffers an irreparable loss.

Standing in the front rank of our profession, Dr. French was honored throughout the State; for twenty years he was a member of the State Board of Censors, and for ten years treasurer of this society. As a husband and father, loving and thoughtful; as a neighbor, courteous and friendly; ever moved by a kind and generous heart, and ever prompt to express sympathy for others in distress.

A strong and symmetrical life, esteemed by all.

J. L. APPLETON, M. D. S., *President*,
F. LE GRAND AMES, *Secretary*.

A Post-Graduate School of Prosthetic Dentistry has been started in Chicago, under the personal supervision of Dr. L. P. Haskell. In connection with the school is a Dental Laboratory, where artificial dentures of every description will be constructed for dentists desiring first class work. Particulars can be obtained of M. Stout, D.D.S., Secretary, 34 Monroe street, Chicago, Ills.

Fifty Years of Dental Practice.—A complimentary dinner was given to Dr. William H. Atkinson, on the evening of March 16th, at the "Gerlach," by several New York dentists, the occasion was the completion of fifty years of dental practice by the honored guest.

Beecher's Dental Directory.—Mr. Beecher sends out another revise of his lists of dentists, etc. He certainly seems persistent in keeping the list fresh. Dr. M. P. Beecher, 834 Broadway, New York.

The California State Dental Association, will be held in San Francisco, commencing the third Tuesday in July, and lasting four days.

Respectfully yours,
W. Z. KING,
Cor. Secretary.

Miscellaneous.

CAMPHO-PHÉNIQUE.

PROF. J. FOSTER FLAGG, PHILADELPHIA, PA.

The rapidly-developing importance of this peculiar combination of carbolic acid and camphor impels me to a presentation of its especial claims as, probably, the most remarkable medicament which has ever been offered in connection with dental therapeutics.

When it is known that it is a notable germicide, an efficient antiseptic, a non-irritant, a decided local anesthetic, non-poisonous, insoluble in water or glycerin, does not discolor or stain, is possessed of an agreeable odor and not disagreeable taste, and maintains an unchanged integrity, it will at once be recognized as wonderfully adapted to a large proportion of all dento-pathological conditions, from sensitivity of dentine through the varying conditions of pulp irritation, pulp-devitalization, pericemental irritation, alveolar abscesses, and caries or necrosis of contiguous osseous structure, and that thus it must rank as one of the most, *if not the most, valuable* polychrest which dentistry possesses.

During the past session of the college with which I am connected (since September, 1888) I have availed myself of the extended opportunities afforded for a decisive clinical record of this material, and the results have been so gratifying that it is with much satisfaction that I present its claims to recognition and urge a prompt acceptance of the many benefits it has to bestow.

Where cotton is indicated as a wedge, and especially where marked sensitivity of dentine exists in connection with such cavities between teeth, both the discomfort attending separating and the pain attendant on subsequent preparation of cavities are largely, and frequently completely abrogated.

In cases of pulp-irritation, even of severe grade, its application, on cotton, will almost invariably demonstrate its high rank as a "pain obtundent."

In devitalization of pulps its use as the menstruum for the arsenic and acetate of morphia in our "devitalizing paste" seems to have already given evidence of its value as a local anesthetic in that connection. As a disinfectant of tissue surrounding pulp cavities and canals which have contained putrescent pulps it has made an excellent record, and has proven itself, by its variety of peculiarly acceptable attributes, to be one of the very best applications we have ever had for the purpose.

As a medicament, or ingredient of medicaments, for canal-dressings, either temporary or *permanent*, on cotton, its combined characteristics of *antisepsis* and *insolubility* must command favorable recognition.

As an antiphlogistic in the earlier stages of sthenic pericementitis, applied upon the gum with small pads of muslin and renewed with *only desirable infrequency*, it has oftentimes been able to produce the attempted resolution; and, in cases where this was found impossible, to largely mitigate the suffering attending the induction of suppuration.

As an antspyogenic, used by injection into fistulæ, either in full strength or diluted by fluid or viscid cosmoline or lanolin, it has produced eminently satisfactory results in some markedly discouraging cases.

It will thus be seen that, from the dental stand-point, camphophénique is a medicine which it behooves us to test thoroughly; that if it shall be found to perform even a portion of the good offices which it so largely promises, suffering humanity shall promptly rejoice over this additional assuager of some of its many ills.

Although intimation of other uses than those pertaining strictly to dentistry might here be regarded as irrelevant, yet so many phases of trouble, such as wounds (cut or contused), burns, sprains, intolerable itchings, etc., are so decidedly relieved by applications of camphophénique (either pure or diluted), that I feel sure that those unfortunates who may chance, through such mention, to find relief from these inflictions cannot but feel grateful for this information.

Campho-phénique is stated by its manufacturers, The Phénique Chemical Company of St. Louis, to be a definite chemical compound, having a formula $C_8 H_{11} O$, and thus, "for obvious reasons," it has had given to it the name under which it is presented to the healing professions.—*Cosmos.*

Lord Derby hits it about right when he says: "I will venture to assert that for one young man whose health has suffered from overwork, you will find half a dozen who have suffered from idleness and from the habits of life which idleness in young men is always sure to produce. There is no better security for steadiness of conduct in a young man than regular work for a definite object. He cannot afford to play tricks with himself, or do anything which may unfit him physically or mentally for the time of trial."

Work Deliberately.—There are some things that must be done in a hurry, or not at all. Catching a flea is one of the best examples. But as a rule, it is safe to say, the man or woman who works deliberately accomplishes the most. The deliberate worker is the thoughtful worker, with whom the habit of system has become second nature. Any one may cultivate it who will take the trouble to try; and the most unsystematic, spasmodic worker will realize the amazement how easy it is to get through an allotted task in half the time it formerly required, by planning it all out before entering on it.—*Scientific American.*

Cement.—Repair cracks or torn places in rubber articles with the following cement:

Sulphide Carbon	16 parts.
Gutta-Percha	2 parts.
India Rubber	4 parts.
Fish Glue	1 part.

Draw together with stitches, if necessary, and apply several coats.

Dental journalism lost a born editor when Dr. W. C. Barrett was deposed.—*Dental Advertiser.*

Well, his successor is also good, and so indefatigable to become better by experience and hard work, we are confident that when he is gone he will be equally missed.—ED. ITEMS.]